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New Species and Notes on North American Acalyptrate Diptera

By CURTIS W. SABROSKY, Entomology Research Division, Agricultural Research Service, U. S. Department of Agriculture

Miscellaneous notes and descriptions in various families of North American acalyptrate Diptera are presented here for public record, to clarify misidentifications and synonymy.

ANTHOMYZIDAE: **Cyamops** Melander

The genus was reviewed by Sturtevant (1954, Proc. U. S. Nat. Mus. 103: 557–559), who referred it to the Anthomyzidae, described one new species, and noted the considerable color variation in *C. nebulosa* Melander. I take this occasion to note sexual dimorphism in color, and to describe a new species with entirely clear wings, undoubtedly confused in the past as a pale-winged variant of *nebulosa*. Sturtevant's key is modified slightly to include the new species.

Key to the Nearctic species of Cyamops

1. Fore tibia and tarsus chiefly black; one pair of scutellar bristles.....*C. imitata* Sturt.
   Fore tibia and tarsus yellow, distal segment of latter infuscated; two pairs of scutellar bristles.....2
2. Wing typically heavily browned on disk and a narrow apical margin, in palest examples with only faint traces of brown along the veins and midway in marginal cell; second vein distinctly sinuate, suddenly narrowing the marginal cell about midway, where discal infuscation begins; halter knob whitish yellow.....*C. nebulosa* Mel.

Wing membrane entirely clear; second vein almost straight, or weakly convex anteriorly considering its entire length, the marginal cell steadily narrowed from base to apex; halter knob predominantly brown to black in females, yellowish in males.....*C. halterata* n. sp.

Cyamops nebulosa Melander

Cyamops nebulosa Melander, 1913, Jour. New York Ent. Soc. 21: 292 (Mass.).

The fortunate collecting of a good series of 33 specimens (18 males, 15 females) at Cranberry Glades, Pocahontas County, W. Va., July 16, 1955, gave opportunity to check sexual dimorphism. In addition to the broader face mentioned by Sturtevant, the females have the entire face and cheek black, palpi brown to black, and antennae infuscated on dorsal half. In the males, the face, anterior half of cheek, and palpus are bright yellow, and the antenna is predominantly so, only narrowly infuscated along the dorsal margin.

Typically the pleuron in both sexes is pollinose, although thinly so and hence shining. In a few specimens, the greater part of the mesopleuron is bare and polished, a character that is often of specific importance. However, I can find no other differences, and for the present at least I regard this as a variation. Three specimens of the 33 noted above, and five from scattered localities, are so marked.

Cyamops halterata, n. sp.

As described for *C. nebulosa* Melander, but differing in the characters noted in the key, and in having the palpi yellowish in both sexes, the central area of the front more deeply velvet black, and the orbital area flanking each antenna narrower and more conspicuously silvery than in *nebulosa,* and without a row of orbital hairs on its surface.

Holotype ♀, Washburn County, Wis., July 6, 1951 (R. H. Jones). Type No. 64220 in the U. S. National Museum. *Allotype,* same locality, Aug. 25, 1951 (Jones). Paratypes:

♂, 2♀♀, Washburn Co., Wis., July 25, 1950, July 10, 1953 (♀) (Jones) [Jones Colln.]; ♀, Wexford Co., Mich., July 17, 1948 (R. R. Dreisbach) [USNM]; ♀, Woods Hole, Mass., June 28, 1950 (A. H. Sturtevant) [USNM]; 3♀♀, Woods Hole, Mass., July 21, 1954 (M. R. Wheeler) and ♀, same locality, Aug. 29, 1950 (Sturtevant) [Wheeler Colln.].

Available material seems to indicate that the new species is more northern than *nebulosa,* but the series is obviously too limited to do more than suggest this as a tentative hypothesis.

MILICHIIDAE: **Stomosis** Melander

This genus was proposed in 1913 for *Desmometopa luteola* Coquillett from Arizona, and that species was subsequently identified from the wide range of Michigan, Indiana, Virginia, Texas, and Costa Rica. Recently the study of additional material and review of former identifications revealed that two species have been confused under the name *luteola,* and that the true *luteola* is a synonym of *innominata* (Will.).

The genus will thus contain the following five known species: *innominata* (Will.), *rufula* (Frey) from Brazil, the new Nearctic species, and two species from Victoria, Australia, *flavoscutellata* Mall. and *vittata* Mall.

Key to the North American species of Stomosis

1. Epaulet black; legs yellow, the knees of mid and hind femora narrowly but distinctly black; conspicuous black stripe along upper margin of sternopleuron, enclosing base of sternopleural bristle (Arizona, St. Vincent, Honduras, Costa Rica, Panama).....*S. innominata* (Will.)
   Epaulet yellow; legs entirely yellow; upper margin of sternopleuron weakly and narrowly browned, the infuscation not enclosing base of sternopleural bristle (eastern United States).....*S. flava,* n. sp.

Stomosis innominata (Williston), n. comb.

Agromyza innominata Williston, 1896, Trans. Ent. Soc. London 1896: 443, pl. 14, fig. 158 (St. Vincent).

Desmometopa luteola Coquillett, 1902, Jour. New York Ent. Soc. 10: 188 (Williams, Ariz.). NEW SYNONYMY.
Stomosis luteola (Coq.) Melander, 1913, Jour. New York Ent. Soc. 21: 242.

The correct family position of *innominata* and its possible synonymy with *Stomosis luteola* (Coq.) were first suggested by H. Oldroyd of the British Museum (Nat. Hist.) in correspondence with Kenneth Frick regarding the identity of Williston's *Agromyza.* Subsequently, Oldroyd kindly compared Costa Rican specimens of *luteola* with the type of *innominata* and found them to be the same. I have no material for clarifying the identity of the other Neotropical species, *S. rufula* (Frey), described from southern Brazil, but it is many years junior to Williston's name and thus does not affect the recognition of the latter.

In addition to the holotype of *luteola,* I have before me 34 specimens of both sexes from the following localities: ARIZONA: Sedona, Oak Creek Canyon, June 29, 1953 (W. W. Wirth). HONDURAS: La Ceiba, June 14, 1920 (F. J. Dyer). COSTA RICA: 22, Higuito, San Mateo (Pablo Schild). PANAMA: Arraijan, Oct. 7, 1952 (F. S. Blanton): Tocumen, Panama Province, Jan. 6, 1953 (Blanton); Piña, Jan. 31, 1954 (Blanton); 7, Almirante, Bocas del Toro, Jan. 1953 (Blanton) [all USNM].

I do not know the correct assignment of the Texas record of *"luteola"* cited by Melander (1913). The other records of *luteola* from eastern United States cited by Sabrosky (1953, Ent. News 64: 39) actually refer to *S. flava,* new species.

Stomosis flava, n. sp.

Stomosis luteola (Coq.) Wirth, 1952, Proc. Ent. Soc. Wash. 54: 240 (Va.) [Misident.].
Stomosis luteola (Coq.) Sabrosky, 1953, Ent. News 64: 39 (Eastern U. S.) [Misident.].

Very close to *S. luteola,* and agreeing with the detailed description for *Stomosis* published by Melander (1913), but char-

acterized as noted in the above key. The species is yellowish to testaceous except for the black hairs, bristles, arista, ocellar tubercle at least in part, central area of occiput, and proboscis at the geniculation; upper margin of sternopleuron narrowly and weakly browned.

Holotype ♂, Lafayette, IND., Aug. 21, 1916 (J. M. Aldrich). Type No. 64221, U. S. National Museum. *Allotype,* same locality and collector, August 7. Paratypes: ALABAMA: ♀, Auburn, 1952 (H. Cunningham). FLORIDA: ♀, Osceola National Forest, Columbia Co., Apr. 19, 1954 (H. V. Weems, Jr.). GEORGIA: ♂ (?), Savannah, Sept. 1, 1954, in privy trap (J. W. Kilpatrick). INDIANA: 2♂♂, Lafayette, Aug. 19, 24, 1916 (Aldrich). MICHIGAN: ♀, E. Lansing, July 31, 1941 (Bruce Wilson) [Sabrosky Colln.]; Monroe, July 4, 1940 (G. Steyskal); Detroit, June 16, 1940 (Steyskal); Grosse Isle, Wayne Co., July 5, 1948 (Steyskal). TENNESSEE: 9, Maynardville, reared from puparia collected in cavity in beech tree, June–Aug., 1955 (W. E. Snow) (4 coll. 7–14, emerged 7–18; 3 coll. 8–16, emerged 8–24; 2 coll. 6–14, emerged 7–1 and 7–29). VIRGINIA: ♂, ♀, Alexandria, June 14, 1951, on flowers (W. W. Wirth); ♂, ♀, Holmes Run, Falls Church, April 15, 16, 1951, reared from tree crotch debris (Wirth). [Colln. USNM, except as noted.]

Genitalia of *innominata* and *flava* were compared, and showed only slight differences, which might or might not prove reliable in a long series of specimens.

The Maynardville, Tenn., series was reared from puparia found in a cavity near the base of a beech tree in a heavily shaded ravine. The cavity contained slightly moist woody material, and now and then a leaf or two. These rearings and that by Wirth at Fall Church suggest that this hitherto rather rare species should be looked for in tree hole debris.

PIOPHILIDAE

For the North American fauna, attention is called to a new synonym, and the record is clarified on a second Arctic species.

Piophila (Allopiophila) arctica Holmgren

Piophila arctica Holmgren, 1883, Ent. Tidskr. 4: 177 (Vaigach I., northern Russia, opposite Novaya Zemlya).
P. aterrima Becker, 1897, Ann. Mus. Zool. St. Petersb. 1897: 402 (Novaya Zemlya). (Synonymy by Hennig, 1943, in Lindner's Fliegen Palaeark. Region, Lfg. 151, Fam. 40, p. 37, from comparison of types).
P. aterrima Becker; Malloch, 1934, Mem. Carnegie Mus. 12 (pt. 2, sect. 4): 22 (Southampton I., Hudson Bay, and Herschell, N.W.T., Canada).
? *Allopiophila* sp. near *A. aterrima* (Becker); Weber, 1949, Ent. News 60: 126; Weber, 1950, Trans. Amer. Ent. Soc. 76: 200 (Point Barrow, Alaska) (det. Sabrosky).
Piophila (*Allopiophila*) *arctica* Holmgren; Weber, 1954, Proc. Ent. Soc. Wash. 56: 89 (Point Barrow, Alaska; det. Sabrosky, correction of preceding).

I have examined the type series in the Naturhistoriska Riksmuseum in Stockholm, and compared Alaskan specimens with it. The species is probably circumpolar, but relatively seldom recorded. I have seen numerous specimens from Point Barrow, Alaska, collected June 22–Aug. 5, 1952 (Paul D. Hurd), July 8–30, 1953 (Hurd), and July 9, 1953 (R. I. Sailer), in addition to those collected earlier by N. A. Weber (see refs.). One example is at hand from Mould Bay, Prince Patrick I., Canada, July 28, 1949 (C. O. Handley) [USNM].

Piophila (Allopiophila) fulviceps Holmgren

Piophila fulviceps Holmgren, 1883, Ent. Tidskr. 4: 177 (Khabarov Bay, northern Russia, opposite Novaya Zemlya).
P. fulviceps Holmgren; Sack, 1923, Rept. Norweg. Exped. Nov. Zemlya, no. 15: 10 (Novaya Zemlya).
Piophila borealis Malloch, 1919, Rept. Canad. Arctic Exped. 1913–18, vol. 3 (pt. C): 84C (Camden Bay, Alaska). NEW SYNONYMY.

I have compared a Point Barrow specimen with the type of *fulviceps* in the Museum at Stockholm. In Alaska, the species is apparently less common than *arctica*, judging from the available material. I have seen a few specimens from Point Barrow,

Alaska, collected by Hurd and Sailer, and a lone specimen from Churchill, Manitoba, June 20, 1930 (O. Bryant) (det. Malloch as *P. borealis*).

Neither *fulviceps* nor *arctica* was included in Melander's review of the family in 1924 (Psyche 31: 78–86), and Malloch's publication of *borealis* in 1919 was overlooked. Fortunately, this has not resulted in any synonymy of Melander's species. The two species are easily distinguished by color, in addition to a number of other characters. *P. arctica* has an entirely black head and body whereas *fulviceps* has the front, outside of the upper orbits and ocellar triangle, and variably, the humeri, sides of mesonotum narrowly, and scutellum bright orange to reddish.

SPHAEROCERIDAE (BORBORIDAE)

Leptocera (Coproica) acutangula (Zett.)

Limosina acutangula Zetterstedt, 1847, Diptera Scandinaviae 6: 499.

In 1948, I recorded this species from southern Georgia (Proc. Ent. Soc. Wash. 50: 85), apparently the first published record for North America. Subsequently A. R. Brooks, then at Ottawa, Canada, wrote me that he had seen a male of the species from Winnipeg, Manitoba, July 1942. Other specimens have since come to my attention from Grant and East Lansing, Mich. and Benton Co., Tenn. Recently several specimens were received from Irving Blake, collected in sweeping over alpine tundra at 13,100 ft. on Mt. Lincoln, Colo., Aug. 24, 1957. It now appears likely, especially from the last record, that the species is a normally Holarctic species long overlooked in North America.

Males have a peculiarly distinctive wing, with the discal cell apically acute and a fringe of about a dozen long hairs on the margin of the wing about at the end of the fifth vein, but females could easily have been confused with other species of the subgenus *Coproica* (*Coprophila* of Duda and Spuler). The females may be separated from other known North American species of this subgenus by the combination of second costal sector

(between veins one and two) longer than the third, and the third and fourth veins not divergent but subparallel.

Leptocera (Limosina) ochripes (Meigen)

Borborus ochripes Meigen, 1830, Syst. Beschr. 6: 209.

This species has not hitherto been recorded from North America, as far as I am aware. Three specimens have turned up in material received for determination: East Lansing, Mich., May 20 and July 15, 1955; Midland Co., Mich., July 15, 1952 (R. R. Dreisbach) [USNM Colln.]. The specimens have been compared with European material determined by O. W. Richards.

The bright yellow front, face and cheeks are a striking characteristic in this predominantly dark and drab genus. The two other North American species of the subgenus *Limosina* Macquart (*Scotophilella* Duda) which have a yellow head can be separated from *ochripes* as follows:

Key to the North American species of Leptocera

1. Third section of costa (between tips of second and third veins) subequal to or barely shorter than second section; occiput predominantly blackish on upper half; all femora and tibiae yellow except for the infuscated distal half of fore tibia.....*L. ochripes* (Mg.)
   Third section of costa obviously longer than second, almost twice or more than twice its length; head entirely yellow; legs not as above, the femora and tibiae with some dark markings.....2
2. Antenna yellow; legs yellow, the fore tibia and apex of fore femur black (Costa Rica).....*L. xanthocephala* Spuler
   Antenna dark brown; legs yellow with mid and hind femora black (N. J.).....*L. palliceps* (Johnson)

Three Species of Eurytoma Important in Biological Control of Weeds (Hymenoptera, Eurytomidae)

By B. D. Burks, Entomology Research Division,
Agr. Res. Serv., U. S. D. A.

This paper includes the descriptions of three species of the chalcidoid genus *Eurytoma* which are of actual or potential importance in projects for the biological control of noxious plants. The first species is a previously undescribed phytophagous one which develops in the seeds of the black sage (*Cordia macrostachya*). It has been introduced from the West Indian island of Trinidad into the Indian Ocean island of Mauritius to aid in the control of this weed. The second species, *Eurytoma cressoni* Howard, is thought to be a parasite of the first; it is redescribed from fresh material. The third species is a previously undescribed parasitic one which attacks the larva of a weevil, *Microlarinus* sp., which feeds commonly in the stems of the puncture vine (*Tribulus terrestris*) in South India. This weevil may prove to be useful in the control of this weed in the United States, but in India its effectiveness is considerably reduced by the attacks of the *Eurytoma*.

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Eurytoma attiva, new species

Eurytoma sp., Williams, 1951, Mauritius Dept. Agr. Ann. Rpt. 1949, no. 25, p. 64.

This species agrees with *howardi* Dalla Torre (= *mayri* Howard not Ashmead) in having weak facial striae which converge on the mouth opening; in having a longitudinal fold crossing the lateral part of the pronotum; in having the prepectus smooth with the posterodorsal angle tonguelike; in having the propodeum almost vertical, with a broad, median, shallow concavity; in that the petiole of the female is so short as scarcely to be visible; and in having the fourth gastral tergite almost or quite as long as the preceding three tergites combined. The females of these two species differ in that the head in anterior aspect is

more square in *attiva* than in *howardi;* the antennal scape and midfemora are partly dark brown to black in *attiva,* although these structures are entirely yellow to tan in *howardi;* and the propodeal concavity is laterally shagreened in *attiva,* but it is rugulose in *howardi.* The males of *attiva* and *howardi* differ in that the antennal scape in *attiva* is clavate toward the apex, but it is not in *howardi;* the abdominal petiole is longer than the hind coxa in *attiva,* but it is slightly shorter than the hind coxa in *howardi.*

Female.—Length 2.5–3.0 mm. Black; antennal scape tan with more or less extensive dark brown to black shading apically; pedicel tan beneath and black above, flagellum dark brown; mandibles, trochanters, bases and apices of femora, tibiae, and tarsi, tan; wings hyaline, venation tan or yellow; ventral base of gaster red-brown; tips of ovipositor sheaths yellow. Pubescence relatively inconspicuous, silvery; one or two pairs of obscure setae on each of basal three gastral tergites, fourth tergite with three pairs, fifth with one and a partial second irregular row of setae extending completely across tergite near its posterior margin, exposed surfaces of sixth and seventh tergites covered with long, slender setae.

Frons in anterior aspect appearing to be almost square, indistinct striae converging on mouth; antennae inserted slightly below center of frons, apex of scape reaching level of vertex; funicle segments becoming progressively slightly broader and shorter toward apex, so that fifth segment is $1\frac{1}{5}$ times as wide and $\frac{2}{3}$ as long as first; club as long as fourth and fifth funicle segments combined; scrobe cavity with margins acarinate; a faint and irregular carina encircling the compound eye; malar furrow present and complete; postocellar line twice as long as ocellocular.

Umbilicate punctures of thoracic notum deep, distinct, interstices strongly shagreened; pronotum with disc of lateral sector with a longitudinal fold; prepectus smooth and shining dorsally, sculptured ventrally, its posterodorsal angle tonguelike; tegula brown, smooth and shining; anterior face of fore coxa excavated and flattened on apical two-thirds of its length; mesosternum

not prolonged anteriorly between bases of fore coxae; forewing with marginal and postmarginal veins equal in length, stigmal vein $\frac{5}{6}$ as long as marginal, submarginal 5 times as long as marginal; hind coxa with deep femoral concavity at apex, surface within this concavity smooth, rest of exposed surface of coxa with irregular, alveolate sculpture, this sculpture more minute on mesal surface than on outer surface.

Propodeum vertical, with a broad, very shallow concavity on meson, this concavity with a median, vertical band of semi-transverse, strong rugae, area of concavity lateral to median band shagreened; propodeal spiracles oval; petiole short, much wider than long, and roughly sculptured; gaster $1\frac{1}{4}$ times as long as thorax, first tergite entirely smooth and shining, second to fifth tergites smooth dorsally; very faintly and minutely sculptured laterally near anterior margins; fourth tergite the longest, being almost or quite as long as first 3 tergites combined; sixth tergite, when seen in lateral aspect, forming a 50° angle with longitudinal axis of gaster.

Male.—Length 2.0–3.0 mm. Antennal scape clavate toward apex; funicle composed of 5 pedunculate segments, first slightly longer and thicker than any one of more distal segments; club two-segmented; petiole longer than hind coxa, ventral apex of petiole smooth, rest of its exposed surface with close, alveolate sculpture; propodeum lacking the broad, shallow concavity of the female, a median, longitudinal groove present with areas lateral to it slightly produced and with rugose, irregular, alveolate sculpture; gaster compressed, $\frac{3}{8}$ as long as thorax, third gastral tergite the longest.

Type locality.—St. Augustine, Trinidad, B. W. I.

Types.—U. S. N. M. No. 64233.

Described from 35♀ and 30♂ specimens as follows: Holotype ♀, allotype ♂, and 13♀ and 10♂ paratypes, St. Augustine, Trinidad, April 1945, reared from inflorescence of *Cordia* sp., R. Donald (specimens received through E. C. McCallan); 1♀ and 1♂ paratypes, St. Augustine, Trinidad, Sept. 1946; 1♀ paratype, Nariva, Trinidad, Nov. 1946, from *Cordia macrostachya* flowers, F. J. Simmonds; 7♀ and 8♂ paratypes, Mauritius, 1949,

reared from seeds of *Cordia macrostachya* from Trinidad, J. R. Williams; 12♀ and 10♂ paratypes, Mauritius, 1950, from seeds of Trinidad *Cordia,* J. R. Williams. Fifteen ♀ and 15♂ paratypes are deposited in the British Museum (Natural History) collection; the rest of the type material is in the U. S. National Museum collection.

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The following species is thought to be a parasite of *Eurytoma attiva,* although it is possible that in part of its larval development its feeding is phytophagous rather than parasitic. As Noble (1940, Roy. Ent. Soc. London Trans. 90: 33) has shown, in some other species of *Eurytoma* the larvae spend part of their lives as parasites, passing the rest as plant feeders. *E. cressoni* was first segregated in material reared from *Cordia* seeds in the Island of Trinidad. Later it was found to have been introduced into the Island of Mauritius in *Cordia* seeds sent there from Trinidad. It was originally determined as an unknown species of *Eurytoma* by A. B. Gahan, formerly of the U. S. Department of Agriculture. Subsequently G. J. Kerrich, of the Commonwealth Institute of Entomology, London, was able to identify it as *Eurytoma cressoni* Howard by comparing specimens with the female type of that species in the British Museum (Natural History) collection. Mr. Kerrich has very kindly checked my redescription against this type.

Eurytoma cressoni Howard

Eurytoma cressoni Howard, 1897, Linn. Soc. London, Zool. Jour. 26: 138; Dalla Torre, 1898, Cat. Hym., v. 5, p. 336; Ashmead, 1900, Ent. Soc. London Trans., p. 338; Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 141.

Female.—Length 1.5–2.5 mm. Black; mandibles, antennae, fore and mid legs, hind legs except coxae, tegulae, venter of gaster, and apices of ovipositor sheaths, yellow to tan, but this light color somewhat variable—pedicel sometimes shaded with black dorsally, a faint yellow or tan spot usually on face ventral

to each antennal socket, hind coxae may be partly or almost entirely yellow or tan, and light color may extend from venter onto lateral areas of fourth and fifth gastral tergites or, sometimes, extend over entire surface of fourth gastral tergite; wings hyaline with venation yellow to tan. Pubescence fine, silvery; dense on metepisternum and sixth and seventh gastral tergites.

Antennae inserted slightly below center of frons, apices of scapes reaching level of anterior ocellus; antennal funicle segments equal in width, and gradually decreasing in length, the first somewhat longer than the fifth; club as long as first and second funicle segments combined; scrobe cavity with lateral and dorsal margins obscurely carinate; face with numerous, strong striae converging on mouth opening; compound eye not encircled by a carina; malar furrow complete; postocellar line $2\frac{1}{2}$ times as long as ocellocular.

Umbilicate punctures of thoracic notum deep, regular, and closely set, interstices very narrow, shagreened; anterior face of fore coxa flattened and slightly excavated from base to apex; mesosternum not produced anteriorly between fore coxae; prepectus smooth dorsally, sculptured ventrally, its posterodorsal angle bluntly rounded; tegula smooth, shining; forewing with marginal vein twice as long as stigmal and $1\frac{1}{3}$ times as long as postmarginal, submarginal vein $3\frac{1}{2}$ times as long as marginal; hind coxa with a shallow femoral cavity at apex, surface within this concavity slightly sculptured, almost smooth, rest of exposed surface of coxa with uniform alveolate sculpture.

Propodeum vertical, median area of propodeum with a shallow and broad concavity, surface of this concavity shagreened and irregularly rugulose, lacking a median, longitudinal band of rugose sculpture; petiole so short as scarcely to be visible in undissected specimens; gaster slightly compressed, varying from $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as thorax; fourth gastral tergite as long as basal 3 tergites combined; first gastral tergite smooth, second and third smooth on dorsomedian line and at posterior margins, otherwise with minute, closely set, irregularly alveolate sculpture; fourth tergite completely sculptured except for a pair of lateral sub-basal smooth spots; fifth tergite more minutely sculp-

tured than fourth; apex of abdomen acuminate, ovipositor and seventh gastral tergite directed obliquely dorsad, ovipositor sheaths slightly exserted.

Male.—Length, 1.5–2.0 mm. Color as in female except that light color is less extensive on hind coxae and gaster, and hind tibiae are usually mostly black; antennal scape broadened in basal $\frac{2}{3}$, constricted apically; funicle with 4 pedunculated segments; club three-segmented; propodeum with median concavity deeper and narrower than in female; petiole as long as or slightly longer than hind coxa; gaster not compressed, $\frac{5}{6}$ as long as thorax; third gastral tergite the longest.

Type locality.—Balthazar, Grenada, B. W. I.

Lectotype.—Female, in the British Museum (Natural History).

This species was originally described from a female and male cotypes. The male cannot now be found either in the British Museum (Natural History) or the U. S. National Museum collections, so it is presumed to be lost. The female specimen is hereby designated as the lectotype, and Mr. Kerrich has so labeled it.

Eurytoma cressoni is redescribed from specimens from St. Augustine, Toco, and Nariva, Trinidad and from Mauritius, reared either from the seeds or from the inflorescence of *Cordia macrostachya*. These specimens are divided between the British Museum (Natural History) and the U. S. National Museum collections.

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The name of the following species has long since gotten into the literature, but no description of it has ever been found. Girault's manuscript types of it have been in the U. S. National Museum collection since 1916. T. V. Ramakrishna Ayyar in 1920, in discussing parasites of *Alcidodes bubo* (F.) in South India, said of it: "Two parasites, *Metastenomyia juliani* Gir., and *Eurytoma pigra* Gir., have been noted on the grub; but not to any great extent." On an accompanying plate he figures a "Chalcidid parasite" of *Alcidodes bubo*, without naming it fur-

ther. The specimen figured is clearly a pteromalid (probably *Metastenomyia*), so that this publication could not be taken to have validated the name *Eurytoma pigra*.

Eurytoma pigra, new species

Eurytoma pigra Girault MS, Ramakrishna Ayyar, 1920, Rpt. Proc. Third Ent. Meeting Pusa, 1919, v. 1, p. 321; Mani, 1938, Cat. Ind. Ins., pt. 23, p. 71; Pruthi and Mani, 1940, Imperial Council Agr. Res., India, Misc. Bul. 30, p. 8; Thompson, 1943, Imperial Par. Serv., Cat. Par. and Pred. Ins. Pests, sect. 1, pt. 1, p. 9.

Eurytoma sp., Ramakrishna Ayyar, 1925, Spolia Zeylonica 13: 244.

This species may be distinguished from other oriental species of *Eurytoma* as follows: It differs from *poloni* Girault in lacking a pair of sublateral, longitudinal carinae on the first gastral tergite; it lacks the conspicuously long and stout setae which are borne on the posterior margin of the hind tibia in *setitibia* Gahan; the female abdominal petiole is short, not as long as or longer than the hind coxa, as in *brunneipennis* Crawford; the face has striae converging on the mouth opening, not with unmodified umbilicate punctation as in *albotibialis* Ashmead, although both *pigra* and *albotibialis* have low carinae on the frons running parallel with and close to the anterior margins of the compound eyes; in *hindupurensis* Gahan the mesosternum is prolonged anteriorly as an acute projection between the anterior coxae, although this projection is truncate apically in *pigra*. Other oriental species, such as *systoloides* Crawford and *manilensis* Ashmead, have convergent facial striae, but they lack the low carinae bordering the compound eyes. The anterior coxa has a distinct toothlike projection near the middle of the outer ventral margin in *nesiotes* Crawford, but this projection is wanting in *pigra*. In both *pigra* and *nesiotes* the propodeum has a very broad, shallowly concave median depression.

Female.—Length 2.5–3.0 mm. Black; antennae, trochanters, bases of fore and mid femora, all but bases and apices of mid tibiae, and sometimes base of gaster, dark brown; apices of all

femora, bases and apices of mid and hind tibiae, and mid and hind tarsi, yellow; front tibiae and tarsi tan; wings hyaline with venation yellow. Pubescence of head, body, and appendages short, silvery; gastral tergites 1–3 bare, fourth tergite with a few setae laterally, tergites 5–7 densely setose.

Antennae inserted in center of frons, apices of scapes reaching level of anterior ocellus; funicle segments all subequal in length and width, fifth segment only very slightly shorter and broader than first, club as long as funicle segments 4 and 5 combined; scrobe cavity carinately margined laterally and dorsally; face with strong striae converging on mouth opening; weak but distinct carinae encircling compound eyes, these carinae bordering the frons laterally; malar furrow obsolete; postocellar line 3 times as long as ocellocular.

Umbilicate punctures on thoracic notum shallow, interstices narrow, somewhat irregular, lightly shagreened; prepectus smooth, shining, its posterodorsal angle blunt; anterior face of fore coxa excavated from base to apex; mesosternum produced forward between bases of anterior coxae, its apex truncate, and a short, median, longitudinal carina present; tegulae black, lightly sculptured, almost smooth; forewing with marginal and stigmal veins equal in length, postmarginal $1\frac{1}{3}$ times as long as marginal, submarginal 4 times as long as postmarginal; hind coxae with minute, alveolar sculpture extending completely over exposed surfaces, a deep, concave femoral groove present at apex.

Propodeum almost vertical, lying at an angle of 80° with longitudinal axis of thorax; median area of propodeum broadly and shallowly concave; surface of concavity shagreened and with a median longitudinal band of confused, semi-transverse rugulae, these varying in intensity in different specimens; propodeal spiracles elongate-ovate; petiole extremely short, but discernible; gaster varying from $1\frac{1}{10}$ to $1\frac{1}{6}$ times as long as thorax, first gastral tergite smooth, tergites 2–4 minutely and closely pitted laterally and anteriorly on dorsum; fourth tergite the longest, being twice as long on dorso-meson as third tergite and as long as first and second combined; gaster acuminate at apex, dorsal

surface of sixth tergite, when seen in lateral aspect, forming a 55° angle with longitudinal axis of gaster.

Male.—Length 2.5 mm. Antennal funicle composed of 5 pedunculate segments, first segment slightly longer than any of those following; club two-segmented; femoral groove at apex of hind coxa more shallow than in female; petiole longer than hind coxa, apex of petiole smooth, rest of its surface with minute, alveolar sculpture; gaster compressed and as long as thorax, third gastral tergite the longest, fourth tergite extremely short.

Type locality.—New Delhi, INDIA.

Types.—U. S. N. M. No. 64167.

Described from 11♀ and 1♂ specimens as follows: Holotype ♀, allotype ♂, and 10♀ paratypes, reared at New Delhi, India, July 5, 1957, from *Microlarinus* sp. larvae boring in the stems of puncture vine, *Tribulus terrestris,* G. W. Angalet. Additional specimens, not included in the type series, parasitized larvae of the weevil, *Alcidodes bubo* (F.) in *Sesbania,* Coimbatore, India, Aug. 7–24, 1916, Ramakrishna Ayyar. The latter specimens, all more or less broken, are Girault's manuscript types. Two ♀ paratypes are deposited in the British Museum (Natural History) collection; the other specimens are in the U. S. National Museum collection.

A New Species of Conosphaeron Linsley from Arizona (Coleoptera: Cerambycidae)

By JOSEF N. KNULL, Department of Zoology and Entomology, The Ohio State University, Columbus 10, Ohio

This interesting specimen appears to belong to genus *Conosphaeron* Linsley (1935).

Conosphaeron pullum n. sp.

Female: Dark brown throughout, shining on both surfaces.

Head coarsely densely punctured, sparsely clothed with long hairs; eyes coarsely granulated; antennae extending beyond

apex of elytra when laid over top, third and following segments flattened, carinate, ciliate to ninth segment, three to seven inclusive spinose at tip, scape stout, coarsely punctured. Ratio of lengths of segments 1 to 10, 4:1:6:4.4:4.8:4.4:4.6:4.2:3.7:3.2, last segment missing.

Pronotum slightly longer than wide, widest back of middle, apex and base about same width; sides rounded with obtuse tubercle back of middle which gives it an angled appearance; surface convex with an elongate smooth area in middle and an oblique one each side near base; a transverse lateral depression each side at base; irregularly, densely, coarsely punctured; sparsely clothed with long ciliate hairs. Scutellum densely clothed with short recumbent pubescence.

Elytra at base wider than widest part of pronotum, widest near base; sides converging toward apex, broadly rounded near apex, apex emarginately truncate; surface densely coarsely punctured, punctures diminishing in size toward apices; densely clothed with long recumbent pubescence, sparsely intermixed with long ciliate hairs.

Beneath abdomen sparsely, finely punctate, pubescence sparse, long; prosternum transversely rugose; femora coarsely punctured toward apices; all tibiae carinate.

Length 12.6 mm.; width 2.9 mm. *Holotype* ♀ collected at light five miles north of Nogales, ARIZONA, July 30, 1957, by D. J. and J. N. Knull, in collection of author.

This species appears to be close to *Conosphaeron piceum* Lins. (1935).

The elytra are considerably wider than pronotum; the long ciliate hairs of elytra are shorter toward apices instead of longer as in *piceum*.

I am indebted to G. B. Vogt for comparing it with specimens in the U. S. National Museum.

REFERENCES

E. G. LINSLEY. 1935. Trans. Am. Ent. Soc., 61: 67–102.
——. 1935. Rev. de Ent., 5: 139–149.

Some Species of the Genus Bathypogon Loew

By Frank M. Hull, University, Mississippi

Flies of small or medium size which belong to the subfamily Dasypogoninae and are characteristic of the Chilean and Australian regions. A number of undescribed species have recently been found in collections and several are described in this paper.

Bathypogon ichthyurus, new species

A small species with wholly black color, except some red on the terminalia and the very dark reddish brown humerus. Further characterized by the 4 pairs of scutellar bristles and the curious, fish-tailed process curving down to the apex of the superior forceps. Length 12 mm.

Male. *Head:* The head is black in ground color, the vertex and front are wider than usual, the occipital pollen grey, the pollen of front and vertex quite thin, simewhat brownish across the upper front and vertex and yellowish grey on the lower half of the front, except for a narrow border along the eye margin, which is longer, denser and brownish yellow. Face a little wider, more produced and protuberant, the elevation occupying the lower two-thirds; the pubescence is greyish white with a yellow cast and the eye margins laterally have thick yellow pubescence cintinued fro mthe front but not extending on the lower face or cheeks. Bristles of face unusually numerous but not very stout. Palpus and proboscis black. All pile and bristles of the head pale brownish yellow, except those of the ocellarium and the short bristles on the upper occiput, which are light brown. Antenna black, except the base of third segment and apex of the second segment, which are sepia brown. Third segment slender, only slightly dilated, the style a little longer than usual.

Thorax: The thorax is everywhere quite black, except on the humerus, which is quite dark reddish brown. Pollen over the mesonotum, including the lateral margin before the suture, dark brown with a distinct reddish cast, but behind the suture some-

what greyish yellow. Though badly preserved, there are evidences of 2 submedial, black stripes separated by 3 narrow vittae of pale brownish yellow pollen, which might possibly be described as greyish yellow. The complement of thoracic bristles consists of 1 posthumeral, 2 notopleural, 1 supraalar, 2 postalar and 4 pairs of strong scutellar bristles. Metapleural bristles not strongly differentiated. The pollen on the black pleuron is reddish to yellowish brown and appears to be rather thin over much of the pleuron.

Legs: The legs are black, except the dorsal surface of the anterior and middle tibiae, which is quite dark reddish brown and a little lighter on the basal half. Tarsi brownish black. All pile and bristles of legs pale brownish yellow. Claws rather slender, brown on the basal third.

Wings: The wings are nearly hyaline with dark brown veins. The lower end vein of the discal cell makes a strong angle with the lower end vein of the fourth posterior cell. There is a minute stump of a vein a short distance from the base of the anterior branch of the third vein.

Abdomen: The abdomen is black with only the terminalia dark reddish to reddish brown. Pollen of abdomen distinctly grey on the dorsal portion of the tergites, where it forms a large posterior triangle, which in some lights appears to be divided medially. The lateral pollen on the first 4 tergites is more or less dark reddish brown, lighter in color on the remaining tergites. The superior forceps are drawn down into an extended, sharply pointed, fish-tail process on each side, thus each half has 2 points with a deep concavity between. The process of the outer point is longer than the medial point. The hypandrium has a prominent, thin, rounded, scoop-like processes.

Type. Male, L. Callabonna, collected by A. Zietz. No date given. Type in the South Australian Museum.

Bathypogon nigrotibiatus, new species

A moderately large species characterized by the general black ground color, the black femora and tibiae; the femora have only narrow, dark reddish brown stripes posteriorly. The thoracic

bristles are pale brown, the scutellar and facial bristles quite pale brownish yellow. Antenna black. A species with very distinct terminalia. The lower apex of the superior forceps has a curious, strong but slender, curved, pointed process; the hypandrium has stout, curved and excavated protuberances. Length 20 mm.

Male. *Head:* The ground color of the head is entirely black, the pollen quite pale greyish yellow, the pubescence of the same color. The stout bristles of the face are extremely pale brownish yellow. First 2 antennal segments are totally black; third missing. Palpus black, but pollinose and not shining, its pile and the lower occipital pile brownish white. Postvertical bristles quite pale.

Thorax: The thorax everywhere is black in ground color, the pollen dark brown widely over the middle and pale brownish yellow laterally. The extreme posterior corner of the humerus laterally has a tiny reddish brown spot. The stripes are very poorly differentiated from either anterior or dorsal view. Along the medial margin of the humerus the pollen is a little lighter and more nearly golden brown. The thoracic complement of bristles, all of them light brown, consist of 1 posthumeral, 2 notopleural, 1 supraalar, 2 scutellar pairs and 3 postdorsocentral elements. The pleural pollen is similar to that on the sides of the mesonotum.

Legs: The legs are everywhere black, except for an indistinct, posterodorsal, reddish brown stripe on the anterior and middle femora. Pile and bristles are pale brownish yellow. Claws stout, slightly more blunt than usual and more than the basal third is light brown.

Wings: The wings are nearly hyaline and dilutely tinged with pale brown, veins dark brown and at the extreme base light reddish brown. The lower end vein of the discal cell and the end vein of the first posterior cell are quite aligned.

Abdomen: The abdomen is blackish sepia in color, the lateral margins with dense, bright, golden brown pollen and the dorsal portion with thin, dark brown pollen. Pile and bristles pale. On the outer third the posterior margins of tergites 2 to 4 are

contrastingly colored, and to some extent this is true of the fifth tergite. These margins are pale brownish yellow with similar pollen. The terminalia are entirely blackish, except for the slender, ventroapical process on the superior forceps, which is red and the hypandrium which is a pale mahogany red ventromedially and again on its apical and lateral half. The ventral process from the hypandrium is darker. This process is quite characteristic and takes the form of a stout, curved, ventral, apically truncate and laterally excavated protuberance.

Type. Male, Cairns District, collected by F. P. Dodd. No date given. Type in South Australian Museum.

Bathypogon microdonturus, new species

A small, light reddish species with dark brown thorax. The head is black in ground color and all bristles are light yellowish brown. The hypandrium has only very small, short teeth. Length 13 mm.

Male. *Head:* The pollen of occiput and front and the pubescence of the face light brownish yellow or ochre colored. The bristles are similar, except those of the face, which are more yellowish. Antenna absent.

Thorax: The thorax is quite dark brown in ground color, including the humerus. Only the coxae are more reddish. The pollen of the mesonotum is a dark, golden brown, but anteriorly between the humeri it is a lighter and faintly reddish golden brown. Humeral, lateral, marginal and the whole pleural pollen is thick, pale, brownish to golden yellow. The thoracic complement of bristles consists of 1 posthumeral, 2 notopleural, 1 supraalar which may be lacking, 2 postalar, 2 scutellar pairs, 4 postdorsocentral and 4 weakly differentiated, metapleural bristles, besides the usual complement of stiff, long, metapleural hairs.

Legs: The femora are moderately stout and are light reddish brown to orange brown with the anterior surface of the anterior and middle pairs and the posterior surface of the hind pair dark sepia brown. The tibiae are light reddish brown with the anterior surface and lateral surface of the hind pair obscurely

darker. All tarsi light brownish red. Claws sharp, slender, with the basal third quite red. Pile and bristles of legs quite pale brown.

Wings: The wings are nearly hyaline and dilutely tinged with pale brown. Veins reddish brown, the apical fourth is darker and villose; the lower end vein of the discal cell makes quite a strong angle with the end vein of the fourth posterior cell, this being one of the strongest angles that we have seen.

Abdomen: The abdomen is reddish brown, darker on the dorsal portion and lighter along the lateral margins, the pollen rather uniformly pale reddish to yellowish brown. Terminalia chiefly reddish brown, rather dark except narrowly along the medial border of the superior forceps. Hypandrium with short, lappet-like processes.

Type. Male, Owieandana, North Flinders Range, collected by Hale and Tindale. Type in the South Australian Museum.

On the Bee Genus Cyphomelissa (Hymen., Apoidea)

By J. S. Moure, C.M.F.,[1] Department of Entomology, University of Kansas, Lawrence, Kansas, and Secção de Zoologia, Universidade do Paraná, Curitiba, Brasil

The genus *Cyphomelissa* Schrottky (1902) contains large robust, parasitic bees found in South America. The conspicuous differences between this genus and similar ones are indicated by Moure (1946, Notas sôbre as mamangabas, Boletim Agrícola, 4: 21–50). The following account contains descriptions of two new forms and a key to known species.

[1] I wish to thank the Rockefeller Foundation (New York), the National Science Foundation (Washington) and the Campanha de Aperfeiçoamento de Pessoal de Nível Superior (Rio de Janeiro) for aid that made this study possible. Also, I wish to thank Dr. Carlos Alberto Campos Seabra of Rio de Janeiro for the stimulus and generosity which he is giving to studies of Brasilian bees, and Dr. Charles D. Michener of the University of Kansas for help in preparation of this paper.

Cyphomelissa magnifica n. sp.

Female: Black, basal half of mandibles and legs in part fuscous chestnut; flagellum with the second and following segments slightly cinereous beneath. Tegulae black, wings dark fuscous with glassy iridescence; veins black.

Entirely clothed with velvety pubescence: black, with some bluish tints in certain lights on head, mesepisterna, metepisterna, posterior two-thirds of tegula, legs, propodeum, a narrow marginal fascia on first tergite, almost whole second, and basal fasciae on third and following tergites, and ventral side; bright yellow on posterior edge of vertex, pronotum and pronotal lobes, mesoscutum, scutellum and metanotum, anterior third of tegula, a patch on mesepisterna around pronotal lobes, basal three fourths of first tergite, and marginal bands on the following ones, on the second almost vestigial and on the third slightly interrupted in middle.

Punctures dense, very fine on clypeus with some larger scattered ones; on mesepisterna coarser with larger ones very sparse.

Head a little broader than long (584:520[2]). Eye longer than lower interorbital distance, and this longer than upper one (392:248:300). Labrum more than twice as broad as long, shallowly emarginate; mandibles slightly bidentate. Clypeus as long as half distance between clypeus and anterior ocellus, broadly and shallowly emarginate on apical border; interalveolar distance almost double alveolorbital distance (76:40); frontal carina a very sharp line; interocellar distance longer than transverse diameter of anterior ocellus, and longer than ocellorbital distance (64:40:48), but shorter than ocelloccipital distance (90). Scape short and bulky (140 × 60), pedicel very short (20); proportions of first four flagellar segments as 54:54:60:60 and diameter of the fourth 50. Scutellum strongly bituberculate, axillae very weakly produced; a strong smooth carina on mesepisternum in front of median coxal cavity, and another forming scrobal suture. Spur of intermediate tibia very strong, strongly bifurcate at apex, the anterior ramus armed with four or five

[2] These lengths are in hundredths of millimeters, measured by eyepiece micrometer.

small teeth or spines. Second submarginal cell the largest, third subtriangular, petiolate with first and second *r-m* anastomosed together a little before meeting marginal cell. Pygidial plate oboval, the border slightly raised, the disc rough with some irregular punctures.

Approximate length 19.6 mm., anterior wing, including tegula, 17.5 mm.; widths of head and abdomen 5.84 and 8.3 mm.

Male: Very similar to female, with some yellow pubescence on the clypeus. Mandibles yellow on apical third, inner tooth a little stronger than in the female.

Head broader than long (584:500); eye longer than interorbital distances, the upper one shorter than lower (392:220: 288). Labrum more than twice as broad as long, shallowly emarginate; malar area linear. Clypeus weakly protuberant as in female, a little longer than half clypeocellar distance (128: 232). Interocellar distance longer than ocellorbital, but shorter than ocelloccipital (56:34:90 and transverse diameter of median ocellus 42). Interalveolar distance almost twice alveolorbital (68:36); frontal carina raised in a sharp angle. Scape short (140 × 54), pedicel very short (14), proportional length of first four flagellar segments as 58:54:54:54, and diameter of the fourth 47. Thorax and legs as in female. Last tergite ending in two strong and very acute teeth; fourth sternite broadly emarginate, tomentous, with a dense fringe of hairs curved at their tips; fifth sternite also emarginate and with a moderate fimbria of straight hairs; sixth largely truncate and with a sparse median tuft.

Approximate length 20.3 mm.; anterior wing, including tegula, 17.6 mm.; widths of head and abdomen 5.84 mm. and 8.80 mm.

Habitat: Manaos, Amazonas, BRASIL, July, 1935, G. V. Vredenburg.

Types: *Holotype* female (17.B.1177), *allotype* male and one paratype in the British Museum (Natural History); one paratype in my collection.

Very closely related to *Cyphomelissa superba* (Ducke), but differing by having yellow fasciae on the metasomal tergites (2–5, female; 2–6, male). It is very probable that these forms are but subspecies of *C. diabolica* (Friese, 1900).

Cyphomelissa commata n. sp.

Male: Black, entirely clothed with black velvety pubescence with some bluish gloss, and with a yellow fringe on the occipital border, and some yellow hairs mixed with black ones on clypeus, parocular areas and on pronotum.

Except as indicated above, this form agrees with *C. magnifica.*

Approximate length 20.2 mm.; anterior wing, including tegula, 16.5 mm.; head and abdominal widths 5.1 mm. and 8.00 mm.

Habitat: Itatiaia (700 meters), Rio de Janeiro, BRASIL, J. F. Zikán, March 22, 1937 (holotype), and Nova Friburgo, Rio de Janeiro, February, 1937.

Types: *Holotype* in Zikán's collection in the Instituto Osvaldo Cruz, Rio de Janeiro; one paratype in my collection.

Probably this form also is only a subspecies of *C. diabolica.*

The following key separates these four forms of *Cyphomelissa:*

1. Dorsum of thorax and first metasomal tergite covered with bright yellow pubescence.....2
   Dorsum of thorax and of the first metasomal tergite clothed with black pubescence.....3
2. Metasomal tergites 2–5, female, or 2–6, male, with bright-yellow marginal fasciae, on second vestigial. (Middle Amazon region).....*C. magnifica* Moure
   Metasomal tergites 2–5 female, or 2–6 male, covered with black pubescence with some bluish gloss in certain lights. (Lower Amazon region).....*C. superba* (Ducke)
3. Posterior edge of vertex with a band of bright-yellow hairs. (Northern Serra-do-Mar region).....*C. commata* Moure
   Posterior edge of vertex black pubescent like rest of body. (Southern Brasil and Paraguay)....*C. diabolica* (Friese)

A Change of Name in the Bombyliid Genus Anastoechus (Diptera).

By JACK C. HALL, University of California, Riverside, California

In ENTOMOLOGICAL NEWS, 67(8): 199, 1956, I proposed the name *Anastoechus deserticola* for a new species. Since that time I have received word from Dr. A. J. Hesse of the South African Museum, Capetown, South Africa, that the name had been used by him in 1938, Ann. S. African Mus., 34: 347, for a South African species of *Anastoechus*. His species was named *deserticolus*. Since the names are of the same formation and since his name has priority I propose the name **Anastoechus hessei** for my *A. deserticola,* in honor of Dr. Hesse.

XIth International Congress of Entomology

The XIth International Congress of Entomology will be held in Vienna from August 17th to August 25th, 1960. Prof. Dr. Karl E. Schedl is the President, and Dr. Max Beier is the General Secretary. All persons who are interested and who have not yet received a circular letter, are asked herewith to please write a postcard to the Secretary's office as soon as possible: Burgring 7, Vienna 1. Further information will be sent to them immediately.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleign, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Tenebrionidae of the World wanted, in exchange for insects of Argentina and neighboring countries. Horacio J. Molinari, Av. Lib. Gral. San Martin 55, Acassuso (Buenos Aires), Rep. Argentina.

Butterflies. Wish to exchange specimens for Japanese species. Please write to Ichiro Nakamura (Boy, age 16), 26 Aza-Nishiyama Obayashi Takarazuka-shi, Hyogo-Ken, Japan.

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THE NEOTROPICAL SPECIES OF THE 'SUBGENUS AESCHNA' SENSU SELYSII 1883 (Odonata)

By Philip P. Calvert

This paper presents an account of the Neotropical species referred by de Selys in 1883 to his subgenus *Aeschna* and of some species unknown to him. His subgenus is here divided into three genera, *Aeschna, Coryphaeschna,* and *Castoraeschna, Aeshna* in its turn being subdivided into the subgenera *Aeschna, Hesperaeschna, Rhionaeschna, Schizuraeschna, Marmaraeschna* and *Neureclipa.* These five subgenera include 2, 15, 1, 3, 4 and 5 species and subspecies respectively. *Coryphaeschna* embraces 9 species and subspecies, *Castoraeschna* 5. Larvae of 2 species of *Hesperaeschna,* 1 species of *Schizuraeschna,* 1 species of *Neureclipa* and 6 species of *Coryphaeschna* are described and figured. Generalities are discussed under the headings: Relationships of the Neotropical Aeshnas to the North American fossils; Relations of the South American Aeshnas to the Palaearctic and Australian species; The geological age and geographical distribution of the ancestors of the Odonata and of the Mammalia; Relations of the Neotropical Aeshnas to each other; The seasonal distribution of the Neotropical species of Aeshna. Forty plates in black and white illustrate the structural and colorational features of the adults, seven those of the larvae. Nineteen tables show the variations in size and in venation of the adults. Six maps show the geographic distribution of all the species concerned. There is an alphabetical index of species, subgenera, genera, authors quoted, and topics.

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